

CLAIMS

1. A method on an information processing system for adjusting volume levels of a Musical Instrument Digital Interface (MIDI) sound file for optimizing play on a sound device, the method comprising:

calculating a first set of loudness levels for each instrument in a MIDI sound file;

calculating a second set of loudness levels corresponding to an audio output range of a sound device;

generating a mapping between the first set of loudness levels and the second set of loudness levels corresponding to the audio output range of the sound device;

generating a gain term for each note in the MIDI sound file; and

modifying the MIDI sound file using the second set of loudness levels and the gain term for each note in the MIDI sound file.

2. The method of claim 1, wherein the information processing system is a computer and wherein the sound device is a mobile telephone.

3. The method of claim 1, wherein the calculating a second set further comprises:

calculating a second set of loudness levels corresponding to an audio output range of the sound device, wherein the audio output range is a reciprocal of a transfer function of a human ear.

4. The method of claim 3, wherein the calculating a second set further comprises:
subtracting the decibel level of the audio output range of the sound device
from the second set of loudness levels.

5. The method of claim 1, wherein the MIDI sound file includes at least one of a
ring tone and a song.

6. The method of claim 1, wherein the generating of a mapping further
comprises:

generating a mapping between the first set of loudness levels and the second
set of loudness levels corresponding to the audio output range of the sound device,
wherein the mapping includes one-to-one correspondence between the first set of
loudness levels and the second set of loudness levels.

7. The method of claim 1, wherein the modifying further comprises:

generating a new MIDI sound file comprising the second set of loudness levels
integrated with the gain term for each note in the MIDI sound file.

8. An information processing system for adjusting volume levels of a Musical Instrument Digital Interface (MIDI) sound file for optimizing play on a sound device, comprising:

a processor configured for performing:

calculating a first set of loudness levels for each instrument in a MIDI sound file;

calculating a second set of loudness levels corresponding to an audio output range of a sound device;

generating a mapping between the first set of loudness levels and the second set of loudness levels corresponding to the audio output range of the sound device;

generating a gain term for each note in the MIDI sound file; and

modifying the MIDI sound file using the second set of loudness levels and the gain term for each note in the MIDI sound file.

9. The information processing system of claim 8, wherein the information processing system is a computer and wherein the sound device is a mobile telephone.

10. The information processing system of claim 8, wherein the processor is further configured for performing:

calculating a second set of loudness levels corresponding to an audio output range of the sound device, wherein the audio output range is a reciprocal of a transfer function of a human ear.

11. The information processing system of claim 10, wherein the processor is further configured for performing:

subtracting the decibel level of the audio output range of the sound device from the second set of loudness levels.

12. The information processing system of claim 8, wherein the MIDI sound file includes at least one of a ring tone and a song.

13. The information processing system of claim 8, wherein the processor is further configured for performing:

generating a mapping between the first set of loudness levels and the second set of loudness levels corresponding to the audio output range of the sound device, wherein the mapping includes one-to-one correspondence between the first set of loudness levels and the second set of loudness levels.

14. The information processing system of claim 8, wherein the processor is further configured for performing:

generating a new MIDI sound file comprising the second set of loudness levels integrated with the gain term for each note in the MIDI sound file.

15. A server for adjusting volume levels of a Musical Instrument Digital Interface (MIDI) sound file for optimizing play on a sound device, wherein the server is connected to a wireless network, the server comprising:

a processor configured for performing for performing:

calculating a first set of loudness levels for each instrument in a MIDI sound file;

calculating a second set of loudness levels corresponding to an audio output range of a sound device;

generating a mapping between the first set of loudness levels and the second set of loudness levels corresponding to the audio output range of the sound device;

generating a gain term for each note in the MIDI sound file; and

modifying the MIDI sound file using the second set of loudness levels and the gain term for each note in the MIDI sound file.

16. The server of claim 15, further comprising:

a transmitter for transmitting the MIDI sound file that was modified to a sound device via the wireless network.

17. The server of claim 15, wherein the information processing system is a computer and wherein the sound device is a mobile telephone.

18. The server of claim 15, wherein the processor is further configured for performing:

calculating a second set of loudness levels corresponding to an audio output range of the sound device, wherein the audio output range is a reciprocal of a transfer function of a human ear.

19. The server of claim 15, wherein the processor is further configured for performing:

generating a mapping between the first set of loudness levels and the second set of loudness levels corresponding to the audio output range of the sound device, wherein the mapping includes one-to-one correspondence between the first set of loudness levels and the second set of loudness levels.

20. The server of claim 15, wherein the processor is further configured for performing:

generating a new MIDI sound file comprising the second set of loudness levels integrated with the gain term for each note in a MIDI sound file.